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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/059,173	01/31/2002	Dong Il Han	P-0336	6533

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EXAMINER
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NATNAEL, PAULOS M

ART UNIT	PAPER NUMBER
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2614

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/059,173

Applicant(s)

HAN ET AL.

Examiner

Paulos M. Natnael

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 and 15-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-13 and 15-21 is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☒ Claim(s) 8 and 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims **1-6** are rejected under 35 U.S.C. 102(b) as being anticipated by Hackett et al. U.S. 5,546,130.

Considering claim 1, Hackett et al. disclose a method and apparatus for forming a video signal using motion estimation and signal paths with different interpolation processing, comprising a motion estimator ME (fig.1) receiving a video input signal. The ME calculates and outputs a BME (block based motion estimation error), a motion vector horizontal component signal (MVX) and a motion vector Vertical component signal (MVY). The outputs of the motion estimator are received by a rank order filter (ROFL), 1<sup>st</sup> and 2<sup>nd</sup> Median filters, MFL1 And MFL2, respectively which in turn output filtered signals to the weighting filters L1, L2, and L3. The output of the weighting filters is then combined in the combiner CB which calculates an output value. The output value, confidence measure, includes the a block based, minimum motion estimation error (BME) and a measure based on the motion velocity or "speed" of movement of the

motion vector or its horizontal (MVX) and vertical components (MVY). See Abstract.

Therefore, Hackett meets the claimed limitations of claim 1.

As to claim 2, Hackett et al disclose that "One method of motion measurement is "block based", that is, it is based on the movement of blocks of picture elements between a current and a previous location from field to field or frame to frame as distinguished from "pixel based" systems in which the motion of individual pixels is measured." Col. 2, lines 28-32

Regarding claim 3, see rejection of claim 1;

Regarding claim 4, see rejection of claim 1;

Regarding claim 5, see rejection of claim 2;

Regarding claim 6, see rejection of claim 4;

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hackett et al. U.S. 5,546,130.

Considering claim 7, Hackett does not specifically disclose the number of pixels in the horizontal direction or in the vertical direction. However, this would be an obvious matter of design choice and it would have been obvious to the skilled in the art to modify the system of Hackett by choosing any suitable number of pixels, since applicant has not disclosed this solves any particular problem and it appears any number of pixels would perform equally well.

***Allowable Subject Matter***

5. Claims 10-13,15-21 allowable over the prior art.
6. Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to disclose a motion-adaptive interpolation apparatus comprising: a field data providing means for receiving an input image signal and storing and outputting field data; a motion detecting means for receiving the continuous field data from the field data providing means and detecting an inter-field and inter-frame motion amount; a post-processing means for improving a reliability of the detected motion; a horizontal directional motion estimating means for estimating a motion in a horizontal direction, obtaining a block matching error by moving a basic unit image region for a motion estimation at certain intervals in a different horizontal direction in

order to perform a temporal compensation for a case that there is a motion in the direction, and detecting a linear-interpolated pixel value; an edge direction detecting means for receiving a field data and a horizontal line data from the field data providing means and detecting an edge direction; and a line interpolating means for receiving output information of the post-processing means, the horizontal directional motion estimating means and the edge direction detecting means, and obtaining a final interpolation value by using a rule and filtering in consideration of an influence of a block matching error value and a pixel value used for a temporal motion compensation. compensation wherein the data value inputted for the rule and filtering includes spatial linear interpolation value according to the edge direction obtained from the edge direction detection means a spatial block matching error at that time and pixels used for a spatial linear interpolation and temporal motion compensated interpolation value obtained from the horizontal directional motion estimating means a temporal block matching error at that time and a pixel value used for a temporal motion compensation, as in claims 19; and estimating an edge direction of a field image to be interpolated, wherein the rule and filtering are performed in a manner outlined in claim 21.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ratakonda et al (U.S. 6,285,711) disclose block matching-based method for estimating motion fields.

Hackett et al. (U.S. 6,438,170) motion estimation using block matching.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (571) 272-7354. The examiner can normally be reached on 10:00am - 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (571)272-7353. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PMN  
April 29, 2005



PAULOS M. NATNAEL  
PATENT EXAMINER